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NEWSLETTER

of the

Hawaiian Botanical Society

VOLUME XII
NUMBER 1
FEBRUARY 1973

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NOTICE

Dues are past due

Please refer to the back page of this issue for membership information. The membership year is from December 1 to November 30. Contact Jim Barrows or Ercell Woolford.

* * * * * * *

PRINCIPAL PAPERS

AHINAHINA - By L. W. Bryan[1/]

David Douglas, famous Botanist from Scotland is credited with having been responsible for first bringing knowledge to the botanical world, of the Ahinahina or Silver Sword (Argyroxiphium sandwicense), thru Dr. W. J. Hooker, eminent English Botanist, who in 1837 named this plant Argyroxiphium douglasii in honor of Douglas. This name however did not persist as it was later learned that some other botanist had in 1836 given it the name of A. sandwicense by which it is known today. Douglas, it will be recalled, visited the island of Hawaii, making several trips, the last one being in 1834 when, on July 14th he was found dead in a wild bullock pit on the slopes of Mauna Kea.

In 1825, James Macrae, a countryman of Douglas, accompanied Lord Byron in the British Frigate, Blonde, on the trip which brought back to Hawaii the remains of Kamehameha II and his queen, Kamamalu, who had died while on a visit to King George IV in London. Macrae was sent on this voyage by the Horticultural Society of London to take care of a collection of plants being sent as a gift to Hawaii and to conduct botanical exploration here in these islands. Macrae climbed to the summit of Mauna Kea on June 17, 1825 and in his diary he describes the Silver Sword so to him must go to the credit of having collected this

1/ L. W. Bryan, retired Associate Territorial Forester advises that this article was published in 1948 in Paradise of the Pacific. It is informative and of continuing interest. Ed.

SHOUT
SHARE
IT

plant nine years before Douglas. Macrae, in writing of his trip to the top of Mauna Kea, states, "The last mile was destitute of vegetation except one plant of the Syginesia tribe, in growth much like a Yucca, with sharp pointed silver coloured leaves and green upright spike of three or four feet producing pendulous branches with brown flowers, truly superb, and almost worth the journey of coming here to see it on purpose." It is easy to agree with Macrae, the plant in full bloom is superb and really beautiful. Well worth going a considerable distance to see.

Silver Sword belongs to the Composite or Sunflower family and are found only on the islands of Maui and Hawaii at high elevations. The Haleakala plants are the best known and perhaps the most beaufiful. While not nearly as plentiful as in former years it is still fairly common and can easily be seen on the slopes inside the crater. The Hawaii species appears to be almost extinct and the writer knows of no remaining specimens on Mauna Kea.[2/] A recent report indicates that there may still be one or two plants growing on the sheer walls of one of the numerous pit craters near the top of Hualalai. On Mauna Loa the National Park Service reports a few specimens growing at 8000 feet near the trail leading to the summit. These seem to be all which remains of a once comparatively numerous plant.

The question naturally arises as to what causes can we attribute the decline of this once plentiful plant. Insects have no doubt been a contributing factor, perhaps a major one. Man has of course assisted in its decline. In Haleakala, prior to the establishment of the National Park, this plant was uprooted and shipped away as ornaments. Many thousands of them were destroyed in this manner. Wild goats and sheep have played an important part in the destruction of this plant. Like the well known Century Plant the Silver Sword dies after maturing its one and only crop of seed. From seedling stage to maturity requires between ten and fifteen years. When the plant reaches flowering stage it sends out a flower bud from the center. This flower bud is apparently considered a nice juicy, succulent morsel by both wild goats and sheep. The writer recalls seeing hundreds of these plants with the flower buds eaten out by wild goats in the Haleakala crater nearly thirty years ago. Once the bud is gone the plant dies and as it has been unable to produce seed, no young plants occur. If this vicious cycle continues the plant soon disappears. In years gone by wild sheep and goats were kept in check by large numbers of wild dogs who ran in packs and who as early as 1825 were reported as being quite numerous. Macrae mentions them in his narrative and states, "that he was informed by his guide that wild dogs had almost exterminated the sheep that Vancouver had brought, pursuing them beyond the line of vegetation, where they became bewildered and died for want of food." Wild dogs continued to be plentiful and kept both wild goats and wild sheep in check for many years. However, these same wild dogs would also kill tame sheep and young calves so that, in order to protect their stock, ranchers on the slopes of Mauna Kea conducted a campaign against them and reduced their number to such an extent that the wild sheep and goats were again able to multiply and become very numerous. Some idea of their number may be had when we learn that during the twenty-five year period ending December 31, 1946, nearly fifty thousand of these animals were killed in and adjacent to the Mauna Kea Forest Reserve. These animals are still quite plentiful and in areas where they occur their favorite food plants are closely grazed. Natural reproduction of Silver Sword is not likely to take place where either goats or sheep are abundant.

In order to attempt to increase and to perpetuate this plant, seed of the Haleakala species was secured in 1935. Germination took place in the nursery and after the plants had become sufficiently large to be able to take care of themselves, they were planted out in March of 1936 within a fenced off area near PUU KIHE in the Mauna Kea Forest Reserve at 8000 feet in elevation. It is not an easy plant to handle for out of fifty plants set out only six survived. These have grown and done well and last year, 1947, the first one came into flower and produced seed. Again this year, one additional plant has bloomed and it is hoped that it will produce seed. Seed obtained in 1947 was planted at the Hilo Nursery and from this seed there has grown five strong seedlings. These will soon be ready to be planted out in a permanent location and an area has been selected and fenced off near Pohakuloa, 6500 feet, between Mauna Kea and Mauna Loa. This may prove to be a little low in elevation but plants growing there will be easily accessible for the public to see and with proper care and protection they may spread and this plant again become more plentiful.

(A fenced exclosure was constructed in 1972 adjacent to the Wailuku River Canyon at about 9,000'. This was a cooperative project by the Division of Forestry, Division of Fish and Game, and U. S. Forest Service, spearheaded by Forester Charles Wakida. The exclosure is for research purposes relating to vegetation rehabilitation including Silver Sword regeneration studies. Ed.)

PROPAGATING NATIVE HAWAIIAN PLANTS

John Obata

(Continued from February 1972)

A synopsis of the author's experience in propagating the species.

NYCTAGINACEAE Pisonia umbellifera (Papala kepau) Seven of eight saplings have survived since 1965. Growth rapid. Has copiously regenerated. F forms seemed to have regenerated naturally. Rockia sandwicensis and Heimerliodendron 3 did not survive under similar shady, wet conditions at WBG. Has ornamental possibilities in dry and wet lowland areas.

LAURACEAE Cryptocarya mannii (Holio) Did not survive the pot stage.

2/ In 1951, the writer counted 27 good Silver Sword plants growing on the pali side of the North Fork of the Wailuku River, (Waipahoehoe Branch). At about 10-1100 feet in elevation. Recently, State Service Forester Ernest Pung reports the sighting of 40 plants in the same area. He estimates that there are today approximately 100 Silver Sword plants alive on Mauna Kea. These are all on steep pali land where animals can not destroy them. It appears that our native Silver Sword can not reproduce naturally unless they are protected from wild animals. L.W.B.

CAPPARIDACEAE Capparis sandwichiana (Pua-pilo) Four out of twelve plants survived open hill top planting for several years at WBG. Germination and pot culture at HBG was excellent. Should be an excellent dry, lowland ornamental.

SAXIFRAGACEAE Broussaisia arguta (Kanawao) Wild seedling transplants did not progress beyond the pot stage at HBG.

PITTOSPORACEAE Pittosporum glabrum (Hoawa) Pittosporum hosmeri (Aawa hua kukui) An unnamed Pittosporum species. (Hoawa) Twenty-four out of twenty-six plants have established themselves since 1965 at WBG. One P. hosmeri has grown robustly for 10 years overlooking the H-1 freeway at HBG. Several species are grown successfully as ornamentals in Honolulu. Most species of Pittosporum should be excellent ornamentals.

ROSACEAE Osteomeles anthyllidifolia (Ulei) Although an arid and lower, open forest inhabitant, several clones have managed to survive the wet climate of WBG for several years. Should do well as a ground cover.

LEGUMINOSAE Acacia koa (Koa) Should do well in the upland valleys. Germination rate (of unrated seed) poor. Once established it grows rapidly.

Canavalia galeata (Awikiwiki) Did not progress beyond the germination stage at HBG.

Erythrina sandwicensis (Monosperma) (Wiliwili) Germination and pot growth was excellent at HBG. Has grown more rapidly at the wetter WBG than in their natural habitat. Grew well from dry lowlands to even wet uplands. Excellent replacement of E. indica for highway plantings.

Mezoneuron kauaiense (Uhiuhi) Easily germinated and grown to pot stage. Its potential as a lowland ornamental not yet ascertained. The black coffee twig borers seem to retard their growth.

Sesbania tomentosa ('Ohai) Germination and pot growth is good. Has bloomed and fruited in wet lowland plantings. Did not survive beyond the first blooming stage in the ground at LA. Does well in the greenhouses. Should do well as an ornamental in the drier areas.

Sophora chrysophylla (Mamane) Did not grow beyond the seedling stage at HBG. At LA it has been planted into the ground. Should do better in a more temperate climate.

Strongylodon lucidus (Nuku-'i'wi) Has grown well at WBG and LA. Has bloomed under cultivation.

GERANIACEAE Geranium tridens (Hinahina) Cuttings did not root. At best it is a temperate climate plant.

RUTACEAE Fagara (Zanthozylum) Oahuense (A'e, Hea'e) Did not survive the pot stage at HBG. However, no generalizations can be made with only two seedlings.

Platydesma campanulatum (Pilo-kea) Survived to the pot stage at HBG. Judgement is premature as circumstances were unfavorable.

Pelea anisata (Mokihana) P. clusiafolia (Alani) P. sandwicensis (Alani) Seed germination was poor, but pot culture was rather simple. Only one of several plants have survived since 1965 at WBG. Should be able to grow with substantial substrate drainage as hilltop plantings. Most plants survived at least a year in the ground at WBG.

EUPHORBIACEAE Aleurites remyi (Kukui) A species probably derived from A. moluccana. Well adapted to lowland cultivation as A. moluccana.

Antidesma platyphyllum (Ha'a, Hame) Easily germinated and grown in pots. Have adapted to ground plantings at WBG and LA. Fifty of fifty-four plants seemed to have survived in the WBG plantings.

Antidesma pulvinatum (Ha'a, Mehame) Seedlings were grown, but no germinations attempted. Easily grown in the pot stage. Has adapted to plantings in LA and also as an ornamental in Honolulu. Rose beetle attacks are heavy. Mortality rate rare in outdoor plantings.

Clayoxylon sandwicense (Poola) Two out of five plants have survived so far at WBG. Its growth is rather anemic. Should have a drier substrate.

Drypetes (Neowawraea) Phyllanthiodes Have not progressed beyond the pot stage. Germination not attempted. Cuttings have grown to the pot stage at LA. The black twig borer (Xylosandrus compactus) probably would prevent this plant from being cultivated.

Euphorbia clusiaefolia (Koko) Three have survived shady, wet, outdoor plantings at WBG for several years. Should do well in a cool, moist, well aerated habitat. Germination not attempted.

Euphorbia rockii (Koko) Germination and growth in pots have not been difficult. It is established at LA. Needs cool, moist, and well drained habitat. Wild collected seedlings did not survive at HBG.

Euphorbia forbesii One clone grew robustly in a greenhouse situation in a pot to a point of being noxious as it regenerated in pots of other plants. It did not survive outdoor planting at WBG.

Phyllanthus sandwicensis (Pamakani) Seedling transplants survived over a year at WBG. No germination was attempted.

ANACARDIACEAE Rhus semialata var. sandwicensis (Neneleau) Germination was poor and it did not survive the pot stage. Cultural conditions in the greenhouse were rather unfavorable.

AQUIFOLIACEAE Ilex anomala (Kawa'u) Several germination attempts failed. One batch of seeds easily germinated at HBG and LA and pot culture robust. No ground plantings attempted so far.

SAPINDACEAE Alectryon mahoe Few seeds have been planted. Two germinated seeds did well in the pot for over a year and succumbed. Poor cultural technique.

Dodonaea viscosa ('A'ali'i) Seemed to do well in almost any type of habitat although not tested in lowland conditions. At the WBG two plants had to be eliminated as they were too competitive for the other natives. Nine out of ten plants have survived.

Sapindus oahuensis (Aulu, Kaulu) All plantings at WBG and LA have survived. Easily germinated and grown in pots. Has been used as an ornamental in Honolulu. Excellent possibility as a tree ornamental.

Sapindus saponaria (manele) Germination and pot culture at HBG has been excellent. Ground plantings not yet attempted.

RHAMNACEAE Alphitonia ponderosa (Kauila) One planting at WBG grew successfully until a falling Eucalyptus branch destroyed it. No germination has been attempted.

Colubrina oppositifolia (Kauila) Two specimen grew well, but one specimen fell victim to a falling Eucalyptus branch at WBG. One specimen still survives since 1965. Germination was not attempted.

Gouania hillebrandii Germination fair; pot culture good if given a lot of light and water restricted. Survived in a wet WBG planting for about three years. Could be grown in a dry, lowland habitat.

ELAEOCARPACEAE Elaeocarpus bifidus (Kalia) Of the few seeds planted, none germinated. Seems difficult to germinate as seedlings are rarely seen in nature.

MALVACEAE Abutilon incanum Germination is fair. Germinated seedlings have adapted to outdoor plantings at the LA.

Gossypium tomentosum (Ma'o, Hawaiian cotton) Germination fairly good and potted plants grew with ease. Survived WBG plantings for about four years. Flowered and fruited in cultivation. Should do well as an ornamental in the arid lowlands.

Hibiscadelphus giffardianus (Hau-kuahiwi) H. Hualalaiensis (Hau-kuahiwi) Fair germination rate, but excellent grower in pots. Does well in outdoor cultivation. The chinese rose beetle (Adorectus sinicus) and the black coffee twig borer (Xylosandrus compactus) seem to systematically destroy many of the plants.

Hibiscus arnottianus (Koki'o-ke'oke'o) H. arnottianus var. Punaluuensis H. Brackenridgei (Aa'o-hau-hele), H. rockii (Aa'o-hau-hele, Yellow hibiscus) H. Clayii, H. immaculatus, H. kokio (Koki'o-ula), H. Newhousei, H. Saint Johnianus, H. Waimeae (Liki'o-ke'oke-o) All the above species have been grown from cuttings. Have grown well in lowland city ornamental plantings and WBG plantings. Have bloomed in cultivation. No germination was attempted.

Hibiscus yongiansus (Hau-hele, Native Pink Hibiscus) Only germination was attempted and results were fair. Has been established at WBG for several years. Requires an open wet habitat.

Kokia drynarioides (Koki'o) K. Cookei (Koki'o) K. kauaiensis (Koki'o) The first two had fair results in germination. The last was grown from cuttings. One K. drynarioides has survived for six years at the WBG. K. Cookei flowered and fruited at WBG. The Kokia possess a great potential as an ornamental. It has not been used because of its rarity. It should do well as it is more of a xerophyte.

Sida fallax ('Ilima) Germination was fair. It seemed to usually survive two years of ground planting before being destroyed by nematodes. Live longer and grow better with a natural nemacide as marigold (Tegetes). Naturally regenerated at WBG.

VIOLACEAE Viola tracheliifolia (Pa-makane) Has bloomed and seeded in greenhouse at HBG and LA. Seeds have been germinated. Ground plantings at WBG did not last more than a year. Seems this violet is strictly a greenhouse ornamental.

Isodendrion longifolium (Aupaka) Does well under greenhouse cultivation. Success of outdoor planting seems doubtful.

Flacourtiaceae Xylosma hawaiiensis (Maua) Two seedlings grew well for about three years. Should do better in a drier habitat. Has ornamental potential in the drier lowlands. No germination attempted.

Begoniaceae Hillebrandia sandwicensis (Pua-maka-nui, Aka'aka'awa) Transplants from the wild did not survive beyond the pot stage. Should do well in a temperate climate.

(To be continued next issue)

EVENTS

Celebration for Miss Beatrice Krauss

Saturday, December, 1972 was a day of thanksgiving for Miss Beatrice Krauss, who is in her last semester of teaching Ethnobotany in the Department of Botany, University of Hawaii.

Friends, including students - past and present and faculty, gathered on the lawn of the Thai Pavillon, East West Center to watch students of Hawaiian heart and blood pay tribute to her with song and dance in her honor. One student, Noelani Crabbe, acted as the lively and fitting M. C. as she introduced students in the dancing and accompanied them on her impromptu ipu - a ukulele case. The occasion was warm and endearing to such an extent that it prompted several guests from the audience, Donald Anderson, Harold St. John, and Bea Krauss herself, to talk stories, Hawaiian style, about the days past.

After the program, friends joined Miss Krauss in the Botany Teaching Garden for pupus and more flower giving and entertainment. The impromptu entertainment was highlighted with a stirring hula done by Noelani and Dr. Kefford, Chairman of the Botany Department.

After good kine slack key, with a backdrop of flowers and plants of the garden and warm feelings for the occasion, Noelani ended the day with a fitting song about the heritage of Hawaii which Miss Krauss has shared formally with her students since 1967.

Needless to say students of Hawaiiana will miss her teaching as reflected by the popularity of her course growing from 50 in 1967 to 500 students in 1972.

Thank you Miss Krauss.

Miss E. Saboski

"Portraits of Flowers of Hawaii" by Marie Nast Wherry, M.D.

Over a period of about 30 years, commencing around 1930, the late Marie Nast Wherry, M.D. visited Hawaii and painted flowers and foliage she found in local gardens. Mrs. Wherry's daughter, Mrs. James G. Ziegler of Carmel, California has made a gift of 75 of her mother's water color portraits of flowers of Hawaii to the Department of Botany, University of Hawaii. The Board of Regents accepted the gift in December 1972, and in his letter of thanks to Mrs. Ziegler, President Harlan Cleveland wrote:

"Dr. Kefford (Chairman, Department of Botany) has told me of Dr. Wherry's visits to Hawaii, the pleasure she derived from painting the flowers of our gardens, and her enthusiasm for promulgating the beauty of Hawaii through her exhibitions on the mainland. We are glad and grateful that our academic community can now share in your mother's pleasure and through her eyes and skill be able to see afresh the plants around us. Dr. Wherry's artistic interpretation of botanical subjects will be a foil for the objective scientific approaches to plants that characterize many of the activities that occur in the St. John Plant Science Laboratory where the paintings will hang."

Dr. N. P. Kefford

Remarkable! We repeat, what is wrong with this description? "It was sunset when a fleeing Hawaiian warrior left the cover of the kiawe scrub and sprinted across the rough lava rock to the enclosure that faced the sea. He made the boundary and disappeared within. He was safe now from the wrath of a vengeful chief of a warring faction. He was within the pagan temple of the city of Refuge." Travel Magazine, February 1970. (Kiawe, (Prosopis pallida) also called algaroba, was introduced to Hawaii in 1828. The pre-19th century landscape at the city of Refuge did not include "Kiawe scrub".)

Monkey Pod

Anon. 1938. Trees--Reforestation, Reserves, continue good work. The Sales Builder v. 11 no. 11, Nov. 1938 pp. 2-22 illus. (Believed to be written by Territorial Forester C. S. Judd or based on an interview with him.)

Two seeds of Monkey pod were brought from Mexico in 1847 by American consul (to Hawaii) Peter A. Brinsmade. He gave the seeds to Mrs. Hoffman. One seed became the tree that stood at the Alexander Young Hotel site until it was destroyed to build the hotel (1899), the other was planted at Koloa, Kauai and was present as a stump in December 1937.

Roger G. Skolmen

Noctuid moth attacks gold fern

A single gold fern (Pityrogramma calomelanos (L.) Link. (syn. P. chrysophylla (L.) Link); Cheilanthaceae) was found infested by larvae of the noctuid moth Callopistria sp., on August 29, 1972 by G. Tanabe, University of Hawaii, Manoa campus, Oahu. The larvae only consumed the fleshy part of the frond leaving the rachis and midrib. The pupa was formed on the dorsal side of the fern frond in a loosely spun cocoon. The emerged adult moth has markings on the topside of the wings, that is characteristic of the genus Callopistria (syn Eriopus). The gold fern is characterized by the gold dust on the underside of the frond. This Tropical American fern is distributed in the Orient and Pacific. In Hawaii it grows wild in the dryer forests and along side trails. This fern is valued as an ornamental. Other ferns reportedly attacked were Nephrolepis exaltata (sword fern), Nephrolepis bisserrata var. furcans (fishtail fern) and Platycerium bifurcatum (elkhorn fern). Photography was done by G. Tanabe, University of Hawaii; the fern was identified by the same. The moth was tentatively identified by W. Gagne (researcher, Entomology Dept., Bishop Museum, Oahu), and confirmed to the genus by F. Howarth (Curator of the Hawaiian Collection, Entomology Dept., Bishop Museum, Oahu). Literature cited: Hawaii Cooperative Economic Insect Report, February 19, 1971.

Not a publication

Scientific Report of the Waihoi Valley Project
Sponsored by: National Science Foundation
Edited by John I. Kjargaard, Project Director
University of Hawaii, 1972

An extremely interesting report by students on a Student Originated Studies Program concerning their expedition to Waihoi Valley, Maui during the summer of 1972 to inventory flora, fauna and other features of the rain forest.

SOCIETY BUSINESS

Letter from Governor Burns, January 29, 1973.

Dear Mr. Green:

Thank you for your letter of December 24, 1972, recommending the establishment of "Koa Management Tracts" on some of the leases which have recently expired on the Big Island.

The expiration of a large block of State leases provides an opportunity to review our land use program. Recognizing the opportunity, the Division of Forestry made recommendations for the establishment of Koa Management Units on some of these lands. At present, their proposal is being studied.

Major problems involved in growing koa commercially have not been resolved. Many introduced insects and diseases affect koa. Severe disease and insect attack can deform a tree and prevent it from becoming merchantable.

Past plantings of koa have been disappointing. These failures may have been due to the spacing of the original planting, the planting of a koa variety in an unfavorable site and elevation, or to the selection of seed from a genetically inferior tree. We have learned a great deal about koa but still do not have knowledge which can assure successful large scale commercial production. A recent Institute of Pacific Islands Forestry publication by Paul Scowcroft, "Acacia Koa Gray -- Monarch of Hawaiian Forest, A Problem Analysis," summarizes present knowledge and problems and provides direction for current research.

We must balance the immediate economic effect of removing a large acreage of grazing land from the local ranches

against the long-term future benefit of a commercial koa industry. There is no question that a commercial koa forest would be very valuable; it may also benefit the native Hawaiian birds. We cannot, however, guarantee successful maturity of a commercial koa forest until research can provide us with techniques to control damaging insects and disease.

All aspects of the problem are currently being studied. I thank you for your recommendation supporting the desirability of establishing Koa Management Units.

Aloha, and may the Almighty be with you and yours always.

Sincerely,

Signed John A. Burns

Annual report of the Secretary for 1972

The Society maintained its high level of involvement in environmental concerns. It influenced better planning for the drainage canal through Ala Moana Park to save unique botanical attributes. The following issues were also dealt with: 1) the proposed liberation of the Axis deer on the island of Hawaii, 2) feral goat removal from Hawaii's National Parks; and 3) the proposal of Molokai Ranch to establish several species of exotic ungulates not already present in the State, on their ranch lands on west Molokai; 4) agricultural diversification and the future of agricultural education; 5) the State Division of Forestry's tree planting plan for the Keaa Section on the Hamakua Forest Reserve, and 6) the Wilderness Proposal for Haleakala National Park. The Society participated in the Environmental Education workshops sponsored by the State Office of Environmental Quality Control and the Citizen's Committee for Environmental Education. Our objectives on environmental planning were presented to tne Environmental Council. We also continued our assistance in funding for an inventory of the Foster Botanic Garden's holdings.

In Society business there were Constitutional amendments to Articles IV, VI and VII. Newsletter production and membership mailing procedure was streamlined to cut costs. Mr. Robert Nelson was elected to replace Mr. Russell LeBarron as Newsletter Editor. The Society withdrew its attendance at the State Fair over its displeasure at the overemphasis on a midway-type format for the Fair. A new Agricultural Advisory Committee was established with Ron Hurov as chairman. There were two summer forays, one to Palehua lead by John Obata and another to Makiki Valley led by Evangaline Funk.

The following persons were awarded by the Society: Freda Shiraki, for her outstanding work for the Ala Moana Park Committee; Dianna Wong as the Senior most likely to reflect credit on Botany; and the 15th Annual Science Fair Winners (Glen Yoshida, Randall Tanaka, Lance Shimokawa and Lon Machida). Miss Bea Krauss was elected Honorary Member of the Society.

Many members, but especially Oscar Kirsch, Bob Warner and Ron Hurov, continued their informative plant displays at several of the regular meetings.

The following programs were presented at the regular meetings:

Jan. 3 "North Hawaiian Islands Wildlife Refuge" by Gene Kridler, Administrator, U. S. Sport Fisheries and Wildlife

Feb. 7 "Increasing Food Production in the Tropical Belt by a Diversified System of Multiple Cropping" by Richard Bradfield, Senior Fellow, East-West Center.

Mar. 6 "The World's Weeds, Their Biology and Distribution" by Drs. Leroy Holm and Juan Pancho, Senior Fellows, East-West Center.

Apr. 3 "Feral Animals versus the Flora of the Hawaii Volcanoes National Park" by Don Reeser, Management Biologist, Hawaii Volcanoes National Park

May 1 "Shooting Plants in East and South Africa" by Dr. Constance Hartt, Plant Physiologist, retired, HSPA

Jun. 5 "Plants for the Hawaiian Garden" by Dr. Horace Clay, Associate Dean, Leeward Community College

Oct. 2 "The Future of Agriculture in Hawaii" by Mr. Fred Erskine, Chairman, Board of Agriculture, State of Hawaii

Nov. 6 "Flora of Ceylon Project" by William L. Theobald, Associate Professor of Botany, University of Hawaii

Dec. 4 "Forest Communities on the Big Island" by Ruth Gay, Lecturer in Botany, University of Hawaii, and retiring president of the Hawaiian Botanical Society

The membership declined by three as of December 1, 1972, to a total of 273, compared to 276 at the same date last year.

Respectfully submitted,

Signed Wayne C. Gagne

January 8, 1973 Regular Meeting

Ruth Gay reported on the meeting of December 23, 1972 with the Governor's Environmental Council; topic stressed was endemic biota.

Ron Hurov, Agriculture Advisory Committee reviewed the problems of decreased pineapple cultivation and the plight of some small farmers.

Mr. Kirsch reviewed the topic of 6-year-old plans to construct a building at Foster Garden which would be a meeting hall, etc.

A motion passed that the Society donate $25 to Flora Pacifica.

A motion passed that the Society participate in the 1973 Science Fair.

Speaker of the evening, Paul Weissich, Director, Honolulu Botanic Gardens, who gave an illustrated talk on an "African Safari".

Mr. Warner displayed citrus varieties.

FILLER

Hawaii Natural Area Reserves System

Criteria for Selecting Natural Areas

Adopted by Natural Area Reserves System Commission
February 25, 1971

The Natural Area Reserves System Commission is responsible for establishing criteria for selecting Natural Areas. In doing this, the Commission must interpret the purposes of Act 139 which establishes the Natural Area Reserves System and states " --- unique natural assets should be protected and preserved both for the enjoyment of future generations and to provide base lines against which changes which are being made in the environments of Hawaii can be measured; --- ."

The Commission asserts that the word "enjoyment" used in the act does not mean on site recreation use, but does mean cultural or scientific enrichment or satisfaction. The Commission has determined that the Natural Area Reserves System shall have the objective of preserving in as natural a condition as practicable, and in perpetuity, areas of land and/or water in the State of Hawaii which (1) form representative units of ecosystems containing the diversity of terrestrial or aquatic biota of the islands, (2) have unique geologic or physiographic significance, or (3) are necessary for preserving endangered species of Hawaiian fauna or flora. Such areas are to be used, as feasible, for research in natural sciences, as teaching laboratories, for reservoirs of natural genetic materials (gene pools), or for preserving viable illustrations of an original natural heritage. Resources within Natural Areas are not to be subjected to consumptive use or to experimentation other than that specifically approved and judged not to be deleterious to the area.

The following criteria are adopted as important guides for the Commission in selecting areas for the Natural Area Reserves System. However, the Commission shall exercise its prerogative of judgment with regard to these criteria and other criteria in selecting and recommending areas to be included in the Natural Area Reserves System.

Representativeness -- Each selected Natural Area shall be representative of one or more major, natural, relatively unmodified ecosystems, geologic or physiographic features, or habitats containing endangered species of fauna or flora. The description of a proposed area shall include details of the features which make the area distinctive, unique, significant, or representative. The term representative as applied to ecosystems, shall be interpreted in relation to macroclimatic zonation to ensure a balanced geographic distribution of Natural Areas as representative ecosystems.

Scientific Value -- Each Natural Area shall have significant potential, as opposed to individual or ephemeral interest, for scientific study, for teaching, for preservation of distinctive biota or other natural features, or for preserving natural genetic material. The description of a proposed area shall include details of the scientific attributes of the area.

Administrative -- Each Natural Area shall be identifiable on maps and on the ground. It should be reasonably protectable from pests and from physical damage and, legally, from encroachment. Access to the area should be in conformance with the nature and purpose of the area. Utilities, communication facilities, and other right of way developments should be avoided as much as possible. Administrative or management factors should be detailed in the description of each proposed area.

Size of Areas -- Each Natural Area shall be large enough, but no larger than necessary, to accomplish the particular purpose of establishing that Natural Area. A desired size is that which will provide essentially unmodified conditions in the interior portion. The cost and feasibility of protecting the area will have a bearing on size. Some areas may be less than an acre while others may exceed 10,000 acres, where a special need is demonstrated.

Number of Areas -- As many as possible of the major terrestrial and aquatic plant and animal communities and distinctive geologic features on each island should be represented in the Natural Area Reserves System. However, the Natural Area Reserves System shall not include unnecessary duplications of ecosystems or geologic features already protected in Federal Wildlife Refuges or National Parks. It is likely that more than 50 areas will eventually be included in the Natural Area Reserves System, but there may be fewer or, conversely, this may be a conservative number.

Ownership -- Natural Areas shall be composed of lands owned or legally controlled by the State in perpetuity. Privately owned areas desired for the Natural Area Reserves System may be obtained by gift, devise, purchase, or eminent domain as specified in the Act. Federal lands shall not be designated as Natural Areas under Act 139.

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